ABSTRACT

AMIRULLAH. Bioecological study of Anopheles spp. as a basic for developing malaria vector control strategies in the South Halmahera District, North Maluku. Under supervisor of UPIK KESUMAWATI HADI, SUPRATMAN SUKOWATI, AUNU RAUF and FX. KOESHARTO.

A study on bioecological aspects of Anopheles mosquitoes was conducted in Saketa village, South Halmahera District. The research aimed to assess bioecological aspects of mosquito at four different ecosystems, i.e. forests, plantations, bushes, and housings, and to characterize mosquito breeding habitats include biting behavior and morning resting behavior of mosquito Anopheles. Mosquitoes were collected by using human landing collection from 6.00 pm to 6.00 am, four times per month. Larvae were collected from various type of habitats using WHO standard dipper (size of 300 ml) and reared until emerge then identified. Resting morning mosquitoes were collected four times a month in the early morning (6.00-7.30 am).

The research results showed that there were 10 species of Anopheles i.e. An. barbumbrosus, An. farauti, An. hackeri, An. indefinitus, An. kochi, An. koliensis, An. punctulatus, An. subpictus, An. tessellatus, and An. vagus. The highest distribution was found in plantation ecosystem (35.82%), followed by forest ecosystem (33.78%), bushes ecosystem (24.98%), and housing ecosystem (5.42%). An. indefinitus dominantly found in forest ecosystems, whereas An. kochi dominantly found in plantations, bushes and housing areas. Based on correspondence analysis, Anopheles mosquitoes found spread in three main groups namely, An. farauti and An. tessellatus clustered on the bushes and housing ecosystems, whereas An. indefinitus, An. hackeri, An. subpictus and An. vagus on the forest ecosystem, and An. barbumbrosus, An. kochi, An. koliensis, and An. punctulatus clustered in plantation.

There were eight types of breeding habitats of Anopheles spp. i.e. mud hole, ground pool, puddles, tire print/animals footprint, artificial containers, unused cans, ditches, and lagoon. There were six species of Anopheles found i.e. Anopheles farauti, An. indefinitus, An. kochi, An. punctulatus, An. subpictus and An. vagus. The most abundance species is An. indefinitus, followed by An. An. farauti, and An. kochi and the lowest abundance species is An. punctulatus. Although dominant habitat was puddles but most Anopheles were in mud holes. Substrate of the habitats were generally muds and the water was not flowing. Habitats around settlements, plantation and streets were surrounded by grasses, bushes, shrubs and trees. Kinds of water plants consisted of grasses, mosses, algae and their litters, while kinds of predator were dragonflies, shrimps, ephemeroptera, cyclops, gerris, tadpoles and small fish.

The man biting activity of Anopheles spp. in Saketa took place throughout the month within one year of arrest. An. kochi was the species with the highest MBR value which took place in June in plantation ecosystems. In general, MBR activity peaked February, March April, May, June and July with different fluctuation in each species and ecosystem types. Species with the highest MHD value was An. tessellatus which occurred at 21:00 to 22:00 on the in plantation. Generally MHD values peaked before midnight at 21:00 to 22:00 and after the middle of the night between the hours of 01:00 to 04:00. There were five species of Anopheles mosquitoes caught the morning resting i.e. An. indefinitus, An. kochi, An. tessellatus, An. vagus and An. barbumbrosus.
The resting place of Anopheles in the morning on bushes ecosystem were in a clump of bamboo, grass stems, and leaves/stems of shrubs. In plantation area, resting took place in sago groves, bamboo hedges, clumps/trunk sago, under the cottage/field for burning coconut fruits, waste piles and piles of leaves dry.

Key words: Anopheles, Malaria, North Maluku, vector control